Math's Pi—3.14—Becomes Involved in 262 Decimals

Yale Professor Goes On and On and On to Forge Tool of Derived Values That Nobody May Use.

By THOMAS R. HENRY.

Calculations of the log and square of the constant pi—the ratio between the diameter and circumference of a circle—to 215 and 262 decimal places, respectively, have just been announced by the National Academy of Sciences here.

The results are probably the two biggest numbers ever written. Compared to them the national debt in pennies or the weight of the universe in ounces are dwarfish.

Pi is the old friend of grammar school arithmetic—3.14—which must be memorized to find the areas of circles. In the physical tables of the Smithsonian Institution is given the officially accepted figure of 3.14159265359 which is supposed to be exact enough for any possible uses which an engineer might have for it. The circumference or area of a circle which couldn't be gotten rid of. It is possible only to come closer and closer to the area by obtaining successively finer and finer values of the constant, until finally one is so close to the real value that it makes no difference for any purpose whatsoever.

A circle might be considered as the area inclosed within an infinite number of straight lines. The exact area of any figure bounded by straight lines can be determined by making each of these straight lines the base of an imaginary triangle. But obviously this cannot be done when the number of bases is infinite. That is why pi will never come out right.

200 Tedius Steps Further.

But Dr. Horace S. Uhler of Yale University has gone about 200 steps further. He carries it out to the billion-billion-billion - billion - billion - billion-billion-billion-billion - billion - billion-billion-billion-billion-billion-billion-billion-billion-billion-billion-billionth place. Every figure of this titanic calculation has been checked and rechecked. There may be a slight error in the last digit, he admits in his report to the National Academy, which is printed in the current journal, and anybody who cares to know the area of a circle with such great exactness had better be cautious.

Dr. Uhler does not actually calculate the value of pi itself. His results are for various derived values—the logs of pi and of the different elements used in arriving at the ratio, the value of one divided by pi and the square of pi.

Impossible Is Sought.

For centuries there have been futile efforts to "square the circle"—that is, to work out a formula for determining the exact area of a circle rather than

Forges Mathematical Tool.

The value of Dr. Uhler's titanic arithmetical job is not for the present and not for any of the ordinary affairs of life. There is hardly a possibility of anybody wanting to know the circumference or area of a circle with anything like the exactness which the new pi values make possible. But nobody knows when, in theoretical physics, such a need might arise and he has forged a tool which can be used for the purpose. In such a case, he says in his report, "even a single false digit in the published value of a basic constant can cause incalculable loss of time and energy and the literature of large numbers abounds in erroneous figures."

Most of the work was done with a calculating machine, but the calculations were repeated several times to check against one another. Those parts of it which were done on paper were repeated after considerable intervals to guard against any errors which might have crept in.

Dr. Uhler took as his formula for the value of pi one worked out by the Hindu mathematician Srinivasa Ramanujan, considered one of the great mathematical geniuses of all time, which was published in 1927. It is 355 divided by 113, times 1 minus .0003 divided by 3533, times the difference between 1 and .347,000,000,000,-000,000.

Anybody who is a little doubtful about pi can figure it out for himself by this formula.

PIONEER HOMESTEAD TO BE BOUGHT BY U. S.

Ickes Asks Condemnation Action on First Land Occupied Under 1862 Act.

Calculations on the log and square of the constant pi. Secretary of the Interior Ickes yesterday requested Attorney General Cummings to institute condemnation proceedings against the land occupied by the first homestead entered under the homestead act of May 20, 1862.

The land, in Gage County, Nebr., will be included in the proposed Homestead National Monument of America, authorized by Congress March 19, 1936. The entry was made by Daniel Freeman, a soldier of the Union Army, on January 1, 1863, and was the first of more than a million homestead filings.

The monument, Secretary Ickes said, will be a memorial to Abraham Lincoln's interest in helping the "average man" and to the "hardships through which the early settlers passed in developing the West." The plan calls for erection of a museum in which literature and artifacts of pioneer days will be preserved.

DEBATE TOMORROW

Y. M. C. A. to Meet Team From University of Pennsylvania.

The Young Men's Christian Association's debate team will meet a team from the University of Pennsylvania at 8:30 p.m. tomorrow in the Central "Y" Building, 1736 G street N.W. The subject will be, "Resolved: That the National Labor Relations Board be empowered to enforce compulsory arbitration of all labor disputes." The "Y" team will be composed of Lester E. Hurt and John C. Kelley.

WILSON COLLEGE HEAD ADDRESSES D. C. ALUMNI

Small Institutions Holding Own in Educational Field, Pennsylvanian Says.

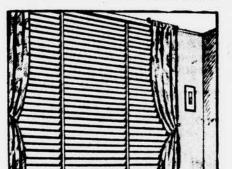The small liberal arts college is holding its own despite the American tendency to worship size and numbers, Paul Swain Havens, president of Wilson College, Chambersburg, Pa., told members of the Wilson Club of Washington at a dinner in his honor at the American Association of University Women Clubhouse last night.

Dr. Havens pointed out that the number of small institutions enrolling 1,000 or fewer students is far in excess of those enrolling more and most of them are privately owned.

England's Physical Fitness Campaign disclosed several London grandmothers who every day touch the top of their heads with their toes.